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Final Technical Report

1 October, 1962 - 30 September, 1963

Professor Thomas Edman

Philadelphia College of Textiles and Science

Development of Prosthetic Knitted Fabrics
Contract No. DA-49-193-MD-2359

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GENERAL PURPOSE SUMMARY CARD

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Textile Department

Philadelphia College of Textiles and Science

Development of Prosthetic

Knitted Fabrics

Professor Thomas Edman

27 December, 1963

Contract Number DA-49-193-MD-2359

Supported by United States Army Medical Biochemical Research Laboratory

U.S. Army Medical Research and
Development Command
Department of the Army
Washington, D.C. 20025

Summary:

The purpose of this project was to develop and finish knitted fabric samples as directed by the staff of the U.S. Army Medical Biochemical Research Laboratory (formerly the U.S. Army Prosthetic Research Lab) for Cosmetic Gloves, Leg Cover Materials, Porous Laminates, Grafts, and other Surgical Fabrics. The fabric samples were used in plastic coating and evaluation experiments by MEDEC M.B.R.L.

Method: 1. There is no final determination of the ultimate Synthetic vascular grafts to be used. We supplied the following prosthesis -

20 pieces 6 mm 80 denier polyester 60 courses per inch 10/4 crimp tubes

20	"	8 mm	80	"	"	60	"	"	"	10/4	"	"
20	"	10 mm	80	"	"	60	"	"	"	10/4	"	"
20	"	12 mm	80	"	"	60	"	"	"	10/4	"	"
10	"	25 mm	140	"	"	60	"	"	"	10/4	"	"
5	"	30 mm	140	"	"	60	"	"	"	10/4	"	"

12 pieces 19-9.5 mm. 140 denier polyester 60 courses per inch 10/4 crimp bifurcation									
5	"	2.5 mm	100	"	teflon	60	"	"	" bleached tubes
5	"	12 mm	100	"	"	60	"	"	" " "
1	yds	2 mm	80	"	polyester	60	"	"	" straight tubes
1	"	3 mm	80	"	"	60	"	"	" " "
1	"	4 mm	80	"	"	60	"	"	" " "
1	"	5 mm	80	"	"	60	"	"	" " "
1	"	6 mm	80	"	"	60	"	"	" " "

The above fabrics were knitted on circular knitting machines 3/8" - 1 1/2" diameter, 30 and 34 cut - single feed and straight rib machine 18 cut, 2 feed, 20" wide.

2. The development of cosmetic gloves continued for adults and children with the following items:-

8 adults right hand

8 " left "

3 child's right "

2 " left "

The glove is knitted on Diamont hand flat rib machine, 10 cut, cam setting

$\frac{5}{10.5} \frac{10.5}{5}$ for tubular construction, using 3 ends of 40 denier "S" twist polyester Fluflon yarn. The finished gloves are mended, scoured and tumble dried.

The palm is knitted on 60 needles in each bed for 200 rounds. SNW (Single Needle Widening) 20 x 2 on both sides. Insert marker yarn for thumb on needles 5 to 40 counting from the right for right glove. SNN (Single Needle Narrowing) 10 x 5 on both sides.

Fingers: needle arrangement	20	22	24	23
	0	20	41	62 80
Total rounds	80	110	120	110
start of narrowing	66	96	106	96

Thumb: start on 36 needles of marker in each bed SNN 10 x 2 on left side only, 100 rounds, start of narrowing at 86.

3. The development of porous laminates included mesh flat knitted fabrics on 28 and 32 gauge 2 bar tricot machines. The size of the openings varied from 1/16" to 1/2". The final fabric was knitted with the following construction:-

FB 10/12/10/12/10/12/10/12/23/21/23/21/23/21/23/21

BB 23/21/23/21/23/21/23/21/10/12/10/12/10/12/10/12

The yarn was 40 denier polyester Flufion, 6 inch quality. Ten yards of fabric was scoured and tumble dried for further processing at MEDEC-MDRL.

4. A large number of assorted constructions were supplied for undesignated end uses as follows:-

1 lb. 1900 denier polyester twisting 4 ends 440 den.

2 yds. 807 tricot fabric

20 " 704 tube 40 DF 12 CPI

10 " 706 " 80 DF 12 CPI

10 " 708 " 80 DF 12 CPI

50 " 360 " 70 DB 13 CPI